TPS 12
Transient Voltage Surge Suppressor
User's Manual

SIEMENS

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⚠ WARNING

- **Confirm XO N-G Bonding at Upstream Transformer**
- **Do Not Hi-Pot Test TVSS**
- **Resulting Damage is not Covered Under Warranty**

WARNING - - IMPORTANT - - PLEASE READ - - WARNING

INSTALLATION - BONDING AND GROUNDING HAZARD: Verify the neutral conductor in the service entrance equipment is bonded to ground in accordance with the National Electrical Code and verify the neutral terminals (XO) on the secondary side of distribution transformers are grounded to the system ground in accordance with NEC and all applicable codes.

During installation into an electrical system, the TPS must not be energized until the electrical system is completely installed, inspected and tested. All conductors must be connected and functional including the neutral (if required). The voltage rating of the device and system must always be verified before energizing the TPS.

Failure to follow these guidelines can lead to abnormally high voltage at the TPS. This may cause the TPS to become inoperative. **The warranty is voided if this device is incorrectly installed and/or if neutral conductor in the service entrance equipment is not bonded to ground in accordance with the National Electrical Code (NEC).**

TESTING - HIGH VOLTAGE TESTING - DO NOT HI-POT TEST: Any factory or on-site testing of power distribution equipment that exceeds the normal operating voltage such as high-potential insulation testing, or any other tests where the suppression components will be subjected to voltages higher than their rated turn on voltage must be conducted with the suppressor **disconnected** from the power source. For 4-wire TPS devices, the neutral connection at the TPS must also be **disconnected** prior to performing high-potential testing and then reconnected upon completion of the test.

Failure to disconnect this surge suppression device and its associated suppression components during elevated voltage testing will damage suppression components and/or other electronic components, **and will void the warranty.**

Save this manual! It includes instructions for obtaining warranty service and returning a defective unit.

RECOMMENDED APPLICATION

Siemens Transient Protection System (TPS) is a high quality, high energy surge suppression system that is designed to protect sensitive equipment from damaging transient overvoltage surges. Proper installation is imperative to maximize the surge suppressor's effectiveness and performance. The installer should follow the steps outlined in this manual to insure a proper installation. **Improper installation will void the unit's warranty.** The entire manual should be read prior to beginning the installation. These instructions are not intended to replace national or local electrical codes. Check all applicable electrical codes to verify compliance. Installation should only be performed by qualified electrical personnel.

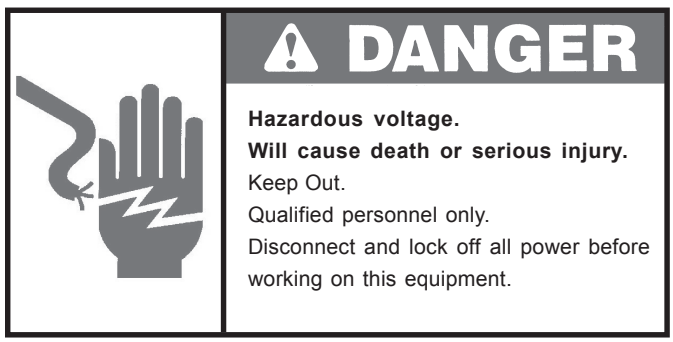
The TPS12 Product Line is a single port parallel surge protection device designed for service entrance and downstream panelboard applications as a stand alone, wall mount unit. The TPS12 Series is available with 120kA, 160kA, or 240kA surge capacity per phase.

All Siemens TPS products are extensively tested according to industry standards by IEEE C62.41 and C62.45, for Categories A, B, and C. The TPS12 Series is listed to UL 1449 Second Edition, UL 1283 Fourth Edition Listed, and UL Listed to Canadian safety standards. This unit has passed UL 1449 Second Edition's most severe fault current test as listed in Section 37.3. This unit is qualified for all circuit ampacities.

The TPS12 Series has 200kA UL Listed Short Circuit Current Ratings (SCCR's) and are suitable for use on circuits capable of delivering not more than 200,000 rms symmetrical amperes.

This device features internal overcurrent and overtemperature protection that will disconnect effected surge protection components at the end of their useful life but will maintain power to the load - now unprotected. If this situation is undesirable for the application, follow these instructions for servicing or replacing the device.

We recommend that the TPS be installed with the shortest and straightest possible lead lengths.


DANGER
Hazardous voltage.
Will cause death or serious injury.
Keep Out.
Qualified personnel only.
Disconnect and lock off all power before working on this equipment.

UNPACKING AND PRELIMINARY INSPECTION

Inspect the shipping container for damage or signs of mishandling before unpacking the unit. Remove the cardboard packing and inspect for obvious shipping damage.

If any damage is found and is a result of shipping or handling, immediately file a claim with the shipping company and forward a copy to either Siemens or your supplier.

STORAGE

The unit should be stored in a clean, dry environment. Storage temperature is -55° C (-67° F) to +65° C (+149° F). Avoid exposing the unit to areas of high condensation. All packaging materials should be left intact until the unit is ready for installation. If the unit has been stored for an extended period of time, inspect unit prior to installing and placing into service.

ENVIRONMENT

The standard enclosure unit is designed to operate indoors in an ambient temperature range of -40° C (-40° F) to +60° C (+140° F) with a relative humidity of 0% to 95% (non-condensing). The standard unit is in a NEMA Type 12 industrial use enclosure which is intended for indoor use primarily to provide a degree of protection against contact with the enclosed equipment. It should not be installed in areas with excessive dust, flammable materials, corrosive vapors or explosive atmospheres. Other NEMA type enclosures are available.

EQUIPMENT PERFORMANCE

To obtain maximum SPD performance, the SPD must be located as close to the circuit as possible to minimize wire length.

We recommend that the TPS be installed with the shortest and straightest possible leads, gently twisted together where possible.

For optimum transient surge protection, staged surge suppression should be implemented at the service entrance and all other electrical connections to the building (telephone, CATV, etc.). Additional surge protection should be installed at recognized surge generating loads such as arc welding rigs, large motors, switched capacitors, etc. Sensitive electronic loads such as computer equipment, facsimile machines, copy machines, solid state motor drives, variable frequency drives, should also have localized surge suppression. For interconnected electronic loads (via data cabling), surge protective devices should also be utilized to protect devices on both ends of data cables.

PRODUCT ORIENTATION

Model number on ID nameplate inside of door can be decoded as follows:

Date of Manufacture, Short Circuit Current Rating, and UL 1449 Suppression Voltage Levels (SVR's) are also on the unit ID nameplate.

Example: TPSC12240SFDR identifies a TPS12, 208Y/120V, Three Phase, Four Wire, 240kA per phase Surge Current Rating, with options: Surge Counter, Flush Mount, Disconnect Switch, and Remote Monitor.

Note: Flush Mount available with NEMA 12 Enclosure Only. Dual Surge Counter available with WYE Voltage Codes Only.

Catalog Number: TPS □ 12 □□□ □□□□□□

Voltage Code	Surge Current (kA)	Options
A = 120/240 1∅ 3W	120	R = Remote Monitor
B = 240/120V 3∅ 4W	160	D = Disconnect Switch
C = 208Y/120V 3∅ 4W	240	03 = NEMA 3R Enclosure
D = 240V 3∅ 3W		04 = NEMA 4 Enclosure
E = 480Y/277V 3∅ 4W		4X = NEMA 4X Enslosure
F = 480V 3∅ 3W		F = Flush Mount Option
G = 600V 3∅ 3W		S = Surge Counter Option
K = 380Y/220V 3∅ 4W		2 = Dual Surge Counter Option
L = 600Y/347V 3∅ 4W		

Note: When no option is selected, a zero (0) is used in option field.

SERVICE CLEARANCE

In addition to national and local code requirements, 36" is required at the front of the TPS Series for service clearance.

AUDIBLE NOISE

Unit noise is negligible and does not restrict the location of the installation.

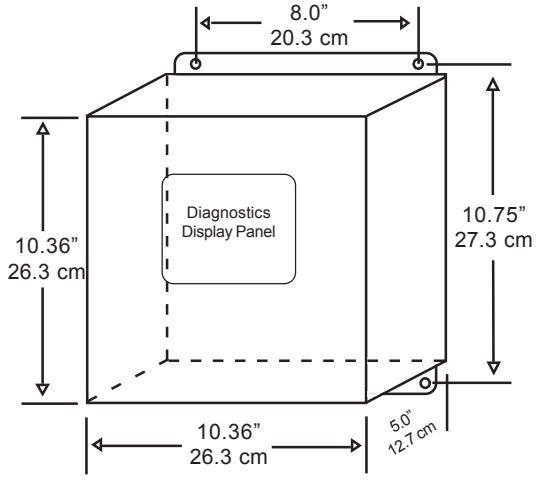
MOUNTING, DIMENSIONS AND WEIGHT

The TPS12 Series is designed to be mounted on a vertical wall. Refer to diagram for mounting dimensions and weight.

⚠ WARNING

- **Confirm XO N-G Bonding at Upstream Transformer**
- **Do Not Hi-Pot Test TVSS**
- **Resulting Damage is not Covered Under Warranty**

MOUNTING, DIMENSIONS AND WEIGHT



- Mounting Holes are 5/16" (0.8 cm)
- Unit weight 21 lbs. (9.6 kg)
- Flange to Flange measures 11.55" (29.3 cm)
- **Optional Enclosure for Disconnect**: Add 2 inches (5 cm) to all dimensions except depth and **add 5 lbs**. (2.3kg)

VERIFY THAT ALL POWER CIRCUITS ARE DEENERGIZED BEFORE MAKING CONNECTIONS

All electrical connections should be performed by a qualified (licensed) electrician or technician. All wiring must comply with the National Electrical Code (NEC) and applicable local codes.

OVERCURRENT PROTECTION

The TPS will only conduct upon encountering an overvoltage condition. TPS's contain UL registered internal fusing to protect against abnormal conditions. TPS's contain internal overtemperature controls.

VOLTAGE RATING

Prior to mounting, verify that the TPS has the same voltage rating as the power distribution system to which it is installed. The specifier or the user should be familiar with the configuration and arrangement of the power distribution system in which any TPS is installed. The *system configuration* of any power distribution system is based strictly on how the secondary windings of the transformer *supplying* the service entrance main or load are configured. This includes whether or not the transformer windings are referenced to earth via a grounding conductor. The system configuration is ***not*** based on how any specific load or equipment is connected to a particular power distribution system. See Table 1 for the voltage rating and the type of power system configuration of the TPS.

TABLE 1: VOLTAGE RATING AND SERVICE TYPE

TPS12 SERIES	SERVICE VOLTAGE
TPSA12	240/120V Split Phase
TPSB12	240/120V Three Phase, High-Leg, DELTA
TPSC12	208Y/120V Three Phase, WYE
TPSD12	240V Three Phase, DELTA
TPSE12	480Y/277V Three Phase, WYE
TPSF12	480V Three Phase, DELTA
TPSG12	600V Three Phase, DELTA
TPSK12	380Y/220V Three Phase, WYE
TPSL12	600Y/347V Three Phase, WYE

TERMINALS

Terminals are provided inside TPS units for line (phase), neutral (if used), and equipment safety ground connections.

WIRING SIZE AND INSTALLATION TORQUE

With a parallel connection, the size of the wiring to the TPS is independent of the ampere rating of the circuit to be protected. Use #8 AWG wire for phase, neutral and ground conductors. Torque connections to 18 inch pounds.

CIRCUIT BREAKER AND DISCONNECT SWITCH

The TPS12 Series is designed for connection to a 30A to 40A circuit breaker (40A preferred). The circuit breaker is the intended disconnect switch and provides short circuit protection to the connecting conductors (an integral disconnect switch is an option as an alternate disconnect means). The TPS12 Series has internal overload protection elements. A breaker or disconnect is not required as overcurrent protection.

SYSTEM GROUNDING

On 4-Wire Power Systems, neutral to ground bonding (Main Bonding Jumper) should be installed per the NEC. Failure to do so will cause equipment damage and void the warranty.

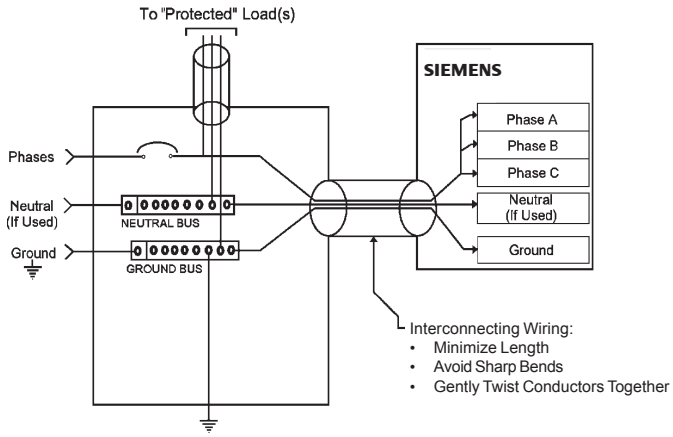
An equipment grounding conductor must be used on all electrical circuits connected to the TPS. For the best performance, use a single point ground system where the service entrance grounding electrode system is connected to and bonded to all other available electrodes, building steel, metal water pipes, driven rods, etc. (for reference see: IEEE STD 142-1991). For sensitive electronics and computer systems, it is recommended that the ground impedance measurement be as low as possible. When metallic raceway is used as an additional grounding conductor, an insulated grounding conductor should be run inside the raceway and sized per the NEC. Adequate electrical continuity must be maintained at all raceway connections. Do not use isolating bushings to interrupt a metallic raceway run. A separate isolated ground for the TPS is NOT recommended. Proper equipment connections to grounding system and ground grid continuity should be verified via inspections and testing on a regular basis as part of a comprehensive electrical maintenance program.

PARALLEL CONNECTIONS

NOTE: Safety Ground required for all units. Per UL 1449 Paragraph 1.4, TPS's are intended for installation on the load side of the main overcurrent protection. Locate the TPS as close as possible to the protected circuit to minimize wire length. This will optimize the performance of the TPS. Long wire runs are to be avoided if the unit is to perform as intended.

To reduce the impedance that the wire displays to surge currents, route the phase, neutral (if used), and ground conductors within the same conduit and should be tightly bundled or gently twisted together to optimize the performance of the unit. Avoid sharp bends in the conductors.

FIGURE 1: TYPICAL PARALLEL CONNECTIONS



TPS 12 INSTALLATION INSTRUCTIONS

1. **WARNING: Disconnect all power while installing the TPS. Attempting to install while energized may result in death or injury. The installation should be performed by qualified electrical personnel.**

2. Verify the neutral conductor of the upstream transformer is bonded to ground in accordance with the National Electrical Code.

3. Use an AC voltmeter to check all voltages to ensure that the proper unit has been selected.

4. Remove power from the AC distribution panel.

5. Mount the TPS on a vertical surface, such as a wall, via the flanges, as close as possible to the panel being protected. Configure an appropriate hole in the enclosure for conductor and communication lines. *NOTE:* If unit has Flush Mount Option, refer to Flush Mount Option information following these instructions.

6. Open the cover by loosening the two screws. Insure ribbon cables attached to the diagnostic faceplate are not mechanically stressed or become unplugged. For units with internally mounted diagnostic faceplates, once the TPS cover is removed, remove the four screws in the corners of the faceplate. Remove and store the screws for reassembly since they are non-captive and can fall out during disassembly and installation. When removing the cover, insure ribbon cables attached to the diagnostic faceplate are not mechanically stressed or become unplugged. Do not allow the diagnostic faceplate to hang by the ribbon cables.

7. Dress the power cables so that the ribbon cables will not be pinched, crushed or otherwise damaged when the TPS cover is closed. If connecting the Dry Contacts, it may be effective to install the communication lines prior to the power conductors.

8. Twist together and keep as short as possible the connecting wires from the TPS to the AC distribution panel.

9. Connect a #8 AWG wire (in conduit) to the safety ground bus of the AC distribution panel and to the ground lug of the TPS. Use a green wire or mark with a green band. Tighten to 18 inch-pounds. Proper grounding is essential for safety.

10. Connect a #8 AWG wire (in conduit) to the NEUTRAL bus of the panel and to the neutral lug of the TPS. Use a white wire or mark with a white band. Tighten to 18 inch-pounds.

11. Connect a #8 AWG wire (in conduit) to each phase feed on the LOAD side of the circuit breaker in the AC distribution panel. Use a 30A to 40A (40A preferred) circuit breaker with the appropriate number of poles. Turn the circuit breaker OFF before making any connection. Refer to the connection lug phase markings in the TPS and on the appropriate diagrams that follow, when making the phase connections.

12. After all connections have been made but before closing the circuit breaker, reinstall the internal diagnostic faceplate if it was removed in step 6. Check to insure that all ribbon cable connectors are all fully engaged in their sockets. Replace the TPS cover and restore power to the AC distribution panel or circuit breaker as required. If the TPS is installed and functioning properly, the green LED indicators on the front diagnostic face plate will be lit and there will be no audible or visual alarms.

13. **WARNING: HIGH VOLTAGE TESTING** - Any factory or on-site testing of power distribution equipment that

exceeds the normal operating voltage such as high-potential insulation testing, or any other tests where the suppression components will be subjected to voltages higher than their rated turn on voltage must be conducted with the suppressor **disconnected** from the power source. For 4-wire TPS devices, the neutral connection at the TPS must also be **disconnected** prior to performing high-potential testing and then reconnected upon completion of the test.

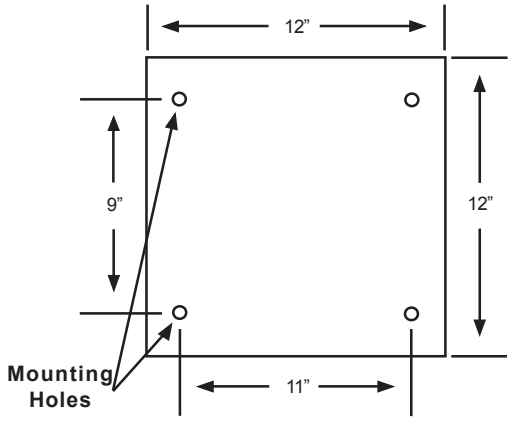
14. If you have any questions pertaining to the installation instructions, call Siemens TPS Technical Support at: 888-333-3545.

OPTIONAL FLUSH MOUNT INSTALLATION INSTRUCTIONS

The TPS12 unit is approximately 5" deep. The unit will not mount flush unless there is at least 5" of clearance. The TPS12 *is not* designed to mount flush on a typical 2 x 4 stud wall.

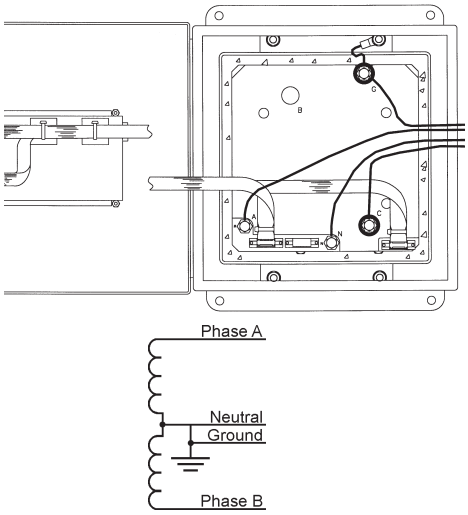
Back Flange Mounting: Mount as close as possible to protected panel. Create a wall opening slightly larger than 12" high by 12" wide. See drawing. Configure a robust backing plate inside the wall cavity 6" from the wall face such that the TPS will be supported from its back. Note the mounting holes on the back flange. Also note that the TPS weighs 25lbs. Be careful not to drop the unit into the wall. Configure electrical conductor and conduit connections consistent with Installation Instructions beginning on page 4. Carefully reattach ribbon cables and faceplate/cover prior to energizing and testing unit.

The TPS12 Series is designed for back flange mounting only. Do not attempt to install the TPS such that its weight is supported by the front flange. The four mounting holes on the front flange are intended to secure the front flange to the outer wall surface.

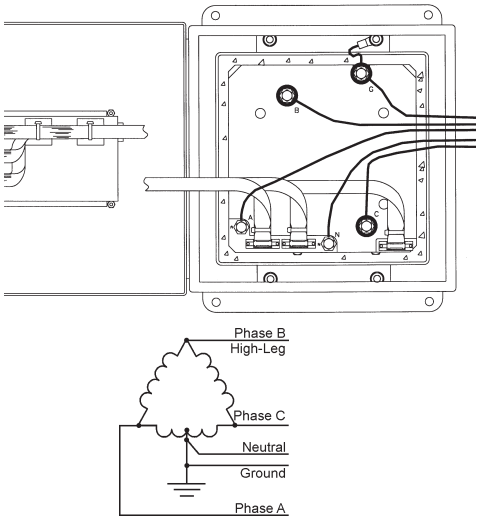


INSTALLATION WIRING DIAGRAMS

TPSA12: 240/120VAC Split Phase, 3 Wire, plus Ground



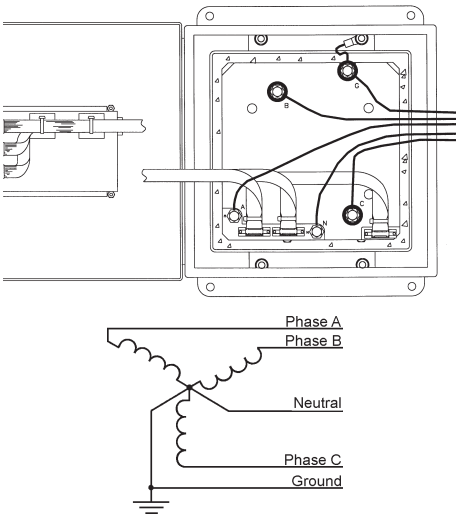
TPSB12: 240/120VAC 3 Phase (High-Leg) DELTA, 4 Wire, plus Ground



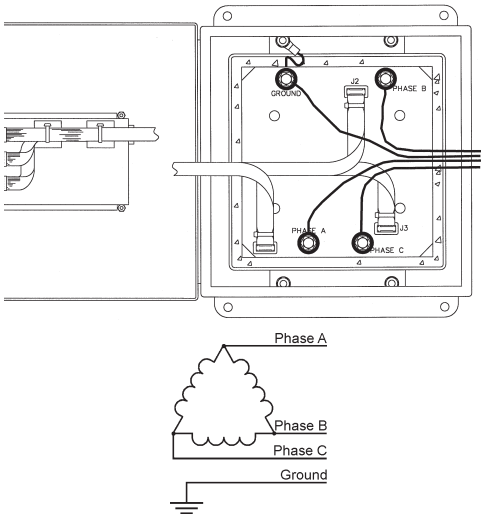
WARNING

- **Confirm XO N-G Bonding at Upstream Transformer**
- **Do Not Hi-Pot Test TVSS**
- **Resulting Damage is not Covered Under Warranty**

TPSC12, TPSE12, TPSK12, TPSL12: 3 Phase WYE, 4 Wire, plus Ground



TPSD12, TPSF12, TPSG12: 3 Phase DELTA, 3 Wire, plus Ground



CAUTION

CONDUCTING DIELECTRIC AND/OR HI-POTENTIAL TESTING WILL CAUSE INTERNAL DAMAGE TO TPS UNIT AND WILL VOID THE UNITS WARRANTY

Do not perform dielectric or high potential tests with the TPS unit installed.

AUDIBLE ALARM

The TPS12 Series device is equipped with an audible alarm which will sound in the event of an alarm condition. In addition, the red Service LED will illuminate, indicating that the device needs service. Press ***Alarm Silence*** to silence the alarm. The red Service LED will remain on even though the alarm is silenced. The Audible Alarm can be tested by pressing ***Test***. This tests the alarm regardless of the Alarm Silence status. ***Test*** tests the red Service LED and the Audible Alarm.

The Siemens TPS requires minimal operator intervention after installation. The TPS Series include a diagnostic circuit which monitors the suppressor status continually and automatically.

SURGE COUNTER OPTIONS

Surge counter options provide a means to total the number of transient voltage surges since the counter was last reset. The surge counter circuitry includes a supercap. This will provide power up to four days to retain memory should a power outage occur. Please note: There is a 10-15 minute charging cycle after first energization, before the surge counter(s) operate.

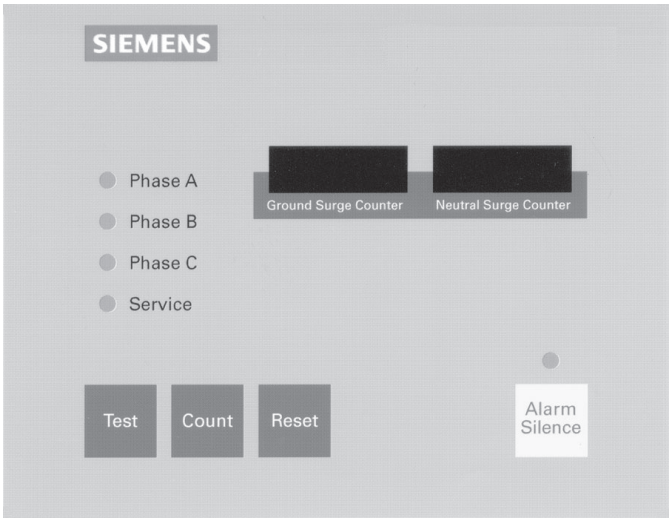
There are two Surge Counter options: a single counter and dual counters. The single Surge Counter registers the sum of L-N and L-G transient surges. The dual Surge Counters separately register L-N transients and L-G transients on their respective counters. There are ***Count*** and ***Reset*** touchpads. Pressing ***Count*** increments the counter(s) by one. Pressing ***Reset*** resets the counter(s) to zero count. (Note: Dual surge counter is not available on the DELTA TPS units which do not have a Neutral.)

DRY CONTACTS OPTION

The TPS12 optional Dry Contacts utilize a DB-9 connector. This feature provides two sets of normally open (N.O.) and normally closed (N.C.) contacts through the DB-9 connector. These relay contacts can be used for remote indication of the TPS' operating status. Examples could include a computer interface board, an emergency management system, etc. The relay contact pin arrangement is outlined in Table 2. (Please note the jumpered connections. Pins 7, 8 & 9 do not represent a third set of contacts.)

An optional Remote Monitor accessory is available that will provide visual and audible indication of an alarm condition. The Remote Monitor collects information through the Dry Contact's DB-9 connection. Please note that the DB-9 connector is completely utilized by the optional remote monitoring accessory. If the Remote Monitor is used, there will be no means to interface with another device.

TPS12 CONTROL AND DIAGNOSTIC PANEL



Test:
Tests red Service LED and Audible Alarm, and changes state of Dry Contacts (if equipped).
Count:
Increments optional surge counter(s) by one (both counters, if equipped).
Reset:
Resets optional surge counter(s) by one (both counters, if equipped).
Alarm Silence:
Turns alarm off. (Note that alarm is de-activated when LED is illuminated)
Phase A, B, & C:
Tri-color LED Status indicators:
Green - Full Protection
Amber - Partial Protection
Red - No Protection
Service:
LED illuminates for any Amber or Red indication.

For custom applications using Dry Contacts, please note the following information:

- The Dry Contacts are designed for low voltage or control signals only.
- Maximum switching current is 1 amp.
- Maximum switching voltage is 24 volts, DC or AC.

Higher energy application may require additional relay implementation outside the TPS. Damage to the TPS' relay caused by implementation with energy levels in excess of those discussed in this manual will not be covered by warranty.

TABLE 2: DB-9 PIN CONFIGURATION

PIN	CONTACT TYPE
1	Normally Closed (1)
2	Common (1)
3	Normally Open (1)
4, 7	Normally Closed (2)
5, 8	Common (2)
6, 9	Normally Open (2)

NOTE: Pin pairs 4 & 7, 5 & 8, and 6 & 9, are connected via jumper internally. The combined current of each pin pair may not exceed 1 Ampere.

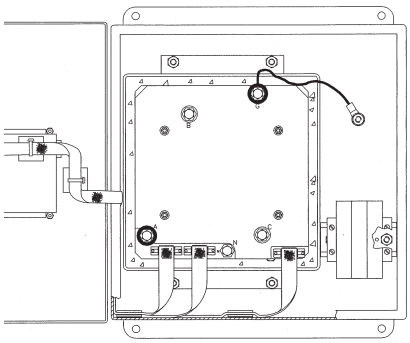
TOUCHPAD & LED STATUS INDICATORS

All indicators and controls are located on the front diagnostic panel of the TPS unit. Each phase features a tri-color LED indicator. Green indicates correct operation. Amber indicates reduced protection. Red indicates loss of protection. If an inoperative condition were to occur, the built-in audible alarm will sound and the red Service LED will illuminate. This indicates that the unit needs evaluation by a qualified electrician or technician. Until a qualified person evaluates the unit, press ***Alarm Silence*** to silence the alarm. (The LED indicator above ***Alarm Silence*** illuminates when the alarm is deactivated. Normal operation occurs with the ***Alarm Silence*** LED extinguished.) The red Service LED will remain illuminated even though the Audible Alarm has been silenced. ***Test*** tests the red Service LED and the Audible Alarm, and changes the state of Dry Contacts (if equipped).

If LEDs are illuminated in a manner that suggests contradictory information, there may be an internal logic problem and the unit needs replacement. If none of the LEDs are illuminated, the unit may not be installed correctly. Please note that the internal storage capacitor for surge counter backup must be energized for about 15 minutes before ***Count*** will function. If a green LED is not illuminated and is suspected of being faulty, a qualified electrician or technician may attempt to diagnose the problem by de-energizing the unit, removing the front cover and exchanging ribbon cable leads with another phase (if available). Upon reenergizing the TPS, the appropriate LED will illuminate if the suspect LED has failed. If troubleshooting indicates a failed LED, please contact Siemens TPS Technical Support at: 888-333-3545.

DISCONNECT SWITCH OPTION

The integral disconnect provides a means to de-energize the TPS for service. With disconnect, the box size is 12.36" x 12.36", without disconnect box size is 10.36" x 10.36".



REMOTE MONITOR OPTION

The Remote Monitor option provides operational status for 1-3 TPS up to 1000 feet away. The Remote Monitor requires input information from each SPD's dry contact.

Connections are made to the Remote Monitor's 10 position terminal block using 25 to 18 AWG wire (not provided). The Remote Monitor includes a 6' cord connected power supply that requires a traditional 120VAC wall outlet.

The Remote Monitor's output has one Green LED, one flashing Red LED, an audible alarm and a Form C dry contact (NO-C-NC).

Upon receiving a status change via the SPD's dry contacts, the Remote Monitor's Green LED will go out, the Red LED will flash, the audible alarm will sound, and the Remote Monitor's dry contact output will change state (i.e.: Normally Open will change to Closed, and Normally Closed will change to Open).

The Remote Monitor has a three position slide switch for Test, Normal, and Silence. The Test position turns the Green LED off, the flashing Red LED on, the audible alarm on, and changes the state of the output dry contacts. During an alarm condition, the Silence position will silence the audible alarm while the Red LED continues to flash. When the anomaly is corrected, reset to the Normal position.

REMOTE MONITOR INSTALLATION INSTRUCTIONS

Plan installation. Remote Monitor can be installed on Din-Rail or included mounting attachment. Position Remote Monitor appropriately with access to power. Remove four screws to access internal circuit board. Note diagram identifying key components. Input wiring diagram identifying several installation options is included. This unit ships with a jumper installed between 2 and 9 for a typical one SPD, Normally Open configuration. The jumper can be removed for other configurations. (FYI: 9 and 10 are jumpered internally.) Attach power leads from power supply (not polarity sensitive). If Output Dry Contacts are used, attach appropriately. Use included tie-wraps for cable strain relief. Reassemble unit and mount. Test unit.

⚠ WARNING

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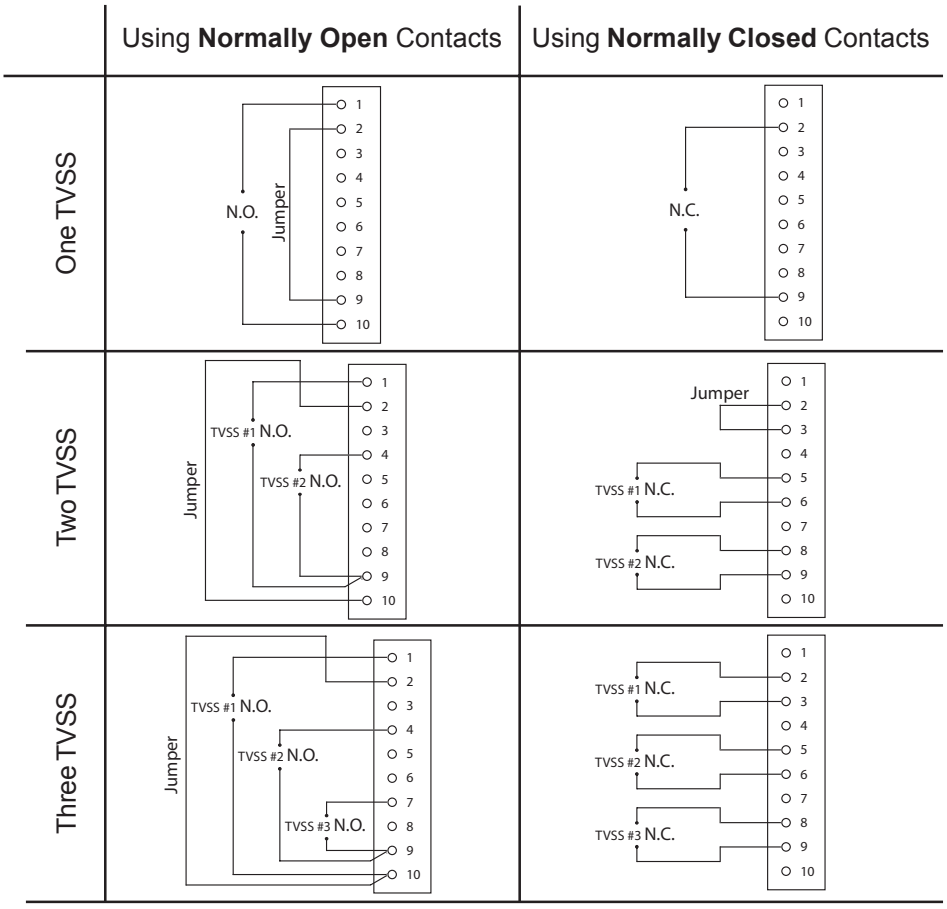
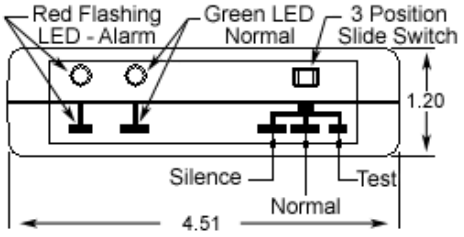
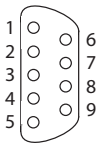
- **Resulting Damage is not Covered Under Warranty**

FIGURE 2: REMOTE MONITOR WIRING DIAGRAMS

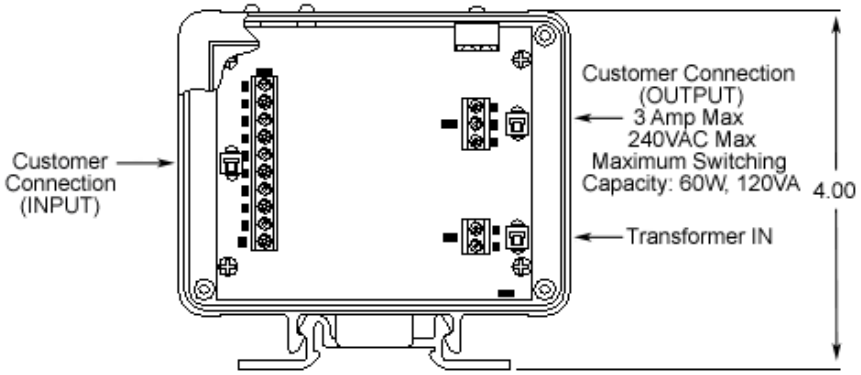




Pinout Diagram for Dry Contacts of TVSS
Using DB-9 Style Connector:



1 Normally Closed
2 Common
3 Normally Open — Form C Set #1
4 Normally Closed
5 Common
6 Normally Open — Form C Set #2
7 Connected to Pin 4
8 Connected to Pin 5
9 Connected to Pin 6



MAINTENANCE

PERIODIC INSPECTION AND CLEANING

Inspection of the TPS should be performed periodically to maintain reliable system performance and continued transient voltage surge protection. While it is difficult to establish a preventive maintenance schedule because conditions vary from location to location, inspections for trouble utilizing the on-line diagnostics should be performed on a routine basis, weekly or monthly.

Every effort should be made to ensure that the TPS remains clean and dry. A towel may be used to wipe the exterior of the enclosure. Avoid excess moisture and dry with a towel as appropriate.

CORRECTIVE MAINTENANCE AND REPAIR

Siemens TPS are designed for many years of safe, reliable, trouble free operation. Unfortunately, even the most reliable equipment can become inoperative.

On-line diagnostics are an integral part of the TPS and indicate if service is required. Audible alarms and abnormal illumination of LEDs indicate problems within the TPS and possibly within the electrical system.

TPS's are an important link in managing power quality issues. Quality TPS's such as the TPS12 Series are designed and tested to withstand severe duty. However, there are various electrical distribution problems that a TPS will not protect against. Should you suspect a TPS problem, a qualified technician should first perform an overview of the electrical distribution system including verification of proper voltages and phasing. Regardless of the cause, TPS's will sacrifice themselves while attempting to protect their load. Accordingly, a failed TPS may indicate other problems, as its failure is the effect rather than the cause.

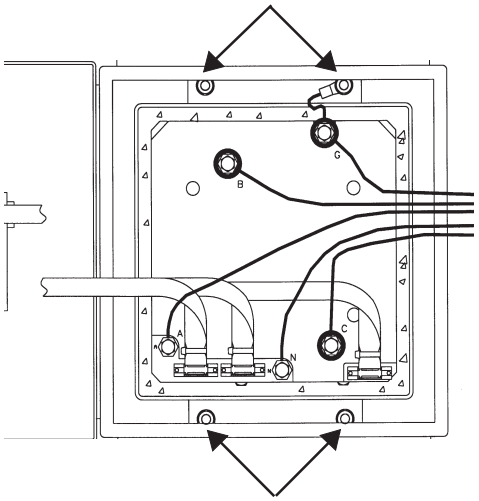
MODULE REPLACEMENT

The TPS12 features a replaceable module. In the unlikely event that a unit becomes suspect or inoperative, replacing the module is the most effective solution. Instructions and diagram to follow.

1. Disconnect the power and confirm that the unit is deenergized with an AC voltmeter.
2. Identify and/or mark all ribbon cables and conductors to aid in re-assembly.
3. Carefully disconnect the ribbon cables and conductors.
4. Remove the four 7/16" nuts attaching the module to the enclosure. Remove the module.
5. Reassembly is opposite of above. Ensure that the green ground wire is reattached. Secure door before reenergizing the unit.

Should you encounter an unusual problem, or require factory service support, please contact Siemens TPS Technical Support at: 888-333-3545.

Module attaching nuts



⚠ WARNING

- **Confirm XO N-G Bonding at Upstream Transformer**
- **Do Not Hi-Pot Test TVSS**
- **Resulting Damage is not Covered Under Warranty**

NOTE: Installing a TVSS/SPD on a distribution system without NEC compliant N-G bonding, or on any ungrounded distribution system, will result in TVSS/SPD damage. Proper N-G bonds establish the distribution systems reference to ground. Without reference to ground, L-G voltages can rise, while L-N voltages remain normal. Suppression elements inside TVSS/SPDs will attempt to control the overvoltage. This is a steady-state condition, not a transient condition, and may damage the TVSS/SPD. This TVSS/SPD includes thermal cutout protection. The activation of any thermal cutout signifies a sustained overvoltage condition in excess of 115% of normal operating voltages, i.e., a distribution system problem. Operation of thermal cutouts can be verified at the factory and is not a defect in workmanship or material.

LIMITED WARRANTY

Siemens warrants it's AC Panel protection products against defective workmanship and materials for 5 years. Liability is limited to the replacement of the defective product. A Return Material Authorization (RA #) must be given by the company prior to the return of any product. Returned products must be sent to the factory with the transportation charges prepaid. In addition, the company also warranties unlimited replacement of modular and component parts within the warranty period previously described.

The company specifically disclaims all other warranties, expressed or implied. Additionally, the company will not be responsible for incidental or consequential damages resulting from any defect in any product or component thereof.

TECHNICAL SUPPORT

1.888.333.3545

Prior to calling Siemens TPS Technical Support for assistance or ordering parts, please have the following information available:

TPS model number: _____
TPS serial number: _____
Manufacture date: _____
Date of Purchase: _____
Your order number: _____
Optional features purchased with the TPS:

☐ Yes	☐ No	Flush Mount "F"
☐ Yes	☐ No	Surge Counter "S"
☐ Yes	☐ No	Dual Surge Counter "2"
☐ Yes	☐ No	Disconnect "D"
☐ Yes	☐ No	Remote Monitor "R"
☐ Yes	☐ No	NEMA 3R Enclosure "03"
☐ Yes	☐ No	NEMA 4 Enclosure "04"
☐ Yes	☐ No	NEMA 4X Enclosure "4X"

Return Shipment Address:

Siemens - Attn: RA #_____
14550 58th Street North
Clearwater, FL 33760

Siemens Energy & Automation, Inc.
Power Distribution Infrastructure Division
333 Old Milton Parkway
Alpharetta, GA 30005

1-800-964-4114 ext. 1234
seainfo@icn.siemens.com

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